



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/644,235	08/20/2003	Douglas M. Gill	100.2483	6473
27997	7590	11/29/2006	EXAMINER	
PRIEST & GOLDSTEIN PLLC 5015 SOUTHPARK DRIVE SUITE 230 DURHAM, NC 27713-7736			CURS, NATHAN M	
			ART UNIT	PAPER NUMBER
			2613	

DATE MAILED: 11/29/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No. 10/644,235	Applicant(s) GILL ET AL.	
	Examiner Nathan Curs	Art Unit 2613	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 20 August 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-25 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-25 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 3 May 2004 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date <u>11/03</u> | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Drawings

1. The drawings are objected to because the blank rectangular boxes of figs. 1 and 7 do not show sufficient detail. Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as "amended." If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the drawings for consistency. Additional replacement sheets may be necessary to show the renumbering of the remaining figures. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Claim Objections

2. Claim 25 is objected to because of the following informalities: the limitation "to selectively and simultaneously create said unasserted data bits and said asserted data bar bits" does not further limit the claim because it is a repetition of the preceding limitation "to selectively and simultaneously create said asserted data bits and said unasserted data bits". Appropriate correction is required.

Claim Rejections - 35 USC § 112

3. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

4. Claims 2, 11, 12, 16, 22 and 24 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention.

Claim 2, 11, 12, 16, 22 and 24 claim modulating the first and second electromagnetic radiation signals with "said source signal"; however the specification only discloses modulating the first and second electromagnetic radiation signals with the toggle circuit output signal which has a different waveform than the source signal.

Claim Rejections - 35 USC § 102

5. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

6. Claims 1, 4-9, 15 and 18-21 are rejected under 35 U.S.C. 102(b) as being anticipated by Fatehi (US Patent No. 4878726).

Regarding claims 1 and 15, Fatehi discloses an apparatus and method for creating a communication signal, comprising a modulator adapted to: modulate a first and a second beam of continuous wave electromagnetic radiation with a source signal (fig. 7 and col. 5, line 59 to col. 6, line 34), assemble modulated portions of said first and second beams into a first electromagnetic radiation signal of interposed regular and alternate data bit sequences comprising asserted non return to zero coded data bits, each of said data bit sequences being interposed by unasserted data bits, in which mutually adjacent asserted data bits are conjoined (fig. 7 and fig. 8, element 56 and col. 5, line 59 to col. 6, line 15), and assemble modulated portions of said first and second beams into a second electromagnetic radiation signal of interposed regular and alternate data bar bit sequences comprising asserted non return to zero coded data bar bits representing said unasserted data bits, each of said data bar bit sequences being interposed by unasserted data bar bits representing said asserted data bits, in which mutually adjacent asserted data bar bits are conjoined (fig. 7 and fig. 8, element 58 and col. 5, line 59 to col. 6, line 15).

Regarding claim 4 and 18, Fatehi discloses the apparatus and method of claims 1 and 15 comprising means adapted to decode said second electromagnetic radiation signal into a copy of said first electromagnetic radiation signal, by converting said unasserted data bar bits into asserted data bits and by converting said asserted data bar bits into unasserted data bits (fig. 7, element 72 and col. 5, lines 11-38).

Regarding claim 5, Fatehi discloses the apparatus of claim 1 in which said modulator is adapted to modulate first and second beams of continuous wave light (fig. 7, elements, 50, 56 and 58 and col. 5, line 59 to col. 6, line 15).

Regarding claims 6 and 19, Fatehi discloses the apparatus and method of claims 1 and 15 further comprising means for transmitting said first and second electromagnetic radiation

Art Unit: 2613

signals to a single destination, providing protection for said source signal against a signal transmission failure (col. 6, lines 16-56).

Regarding claims 7 and 20, the apparatus and method of claims 1 and 15 further comprising means for transmitting said first and second electromagnetic radiation signals to two destinations, bridging said source signal to said two destinations (fig. 7, elements 69 and 71 and col. 5, lines 11-38).

Regarding claim 8, Fatehi discloses the apparatus of claim 1 further comprising: a transmitter for providing said source signal; a receiver; and an optical network having a first path and a second path, each of said paths being in communication with said transmitter and said receiver; said apparatus adapted to transmit said first electromagnetic radiation signal from said transmitter to said receiver on said first path and to transmit said second electromagnetic radiation signal from said transmitter to said receiver on said second path (fig. 7 and col. 5, line 59 to col. 6, line 34).

Regarding claim 9, Fatehi discloses the apparatus of claim 1 further comprising: a transmitter for providing said source signal; first and second receivers; and an optical network having a first path and a second path, said first path being in communication with said transmitter and said first receiver, and said second path being in communication with said transmitter and said second receiver; said apparatus adapted to transmit said first electromagnetic radiation signal from said transmitter to said first receiver on said first path and to transmit said second electromagnetic radiation signal from said transmitter to said second receiver on said second path (fig. 7, elements 69 and 71 and col. 5, line 11 to col. 6, line 34).

Regarding claim 21, Fatehi discloses the method of claim 15 in which each of said first electromagnetic radiation signal and said second electromagnetic radiation signal is an optical signal (fig. 7 and col. 5, line 59 to col. 6, line 15).

Claim Rejections - 35 USC § 103

7. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

8. Claims 2, 10-12, 14, 16 and 22-24 are rejected under 35 U.S.C. 103(a) as being unpatentable over Fatehi (US Patent No. 4878726) in view of Ono et al. ("Ono") (US Patent No. 6388786).

Regarding claims 2 and 16, Fatehi discloses the apparatus and method of claims 1 and 15, and discloses that dispersion limits transmission distance (col. 2, lines 59-65), but does not disclose means for modulating said first electromagnetic radiation signal with a shift signal to shift the phase of said alternate data bit sequences and means for modulating said second electromagnetic radiation signal with said shift signal to shift the phase of said alternate data bar bit sequences. Ono discloses an optical modulation method that compensates for dispersion limitations by modulating an optical signal with a phase signal to shift the phase of alternate data bit sequences of a signal (fig. 4 and col. 4, lines 34-42 and fig. 8 and col. 6, line 65 to col. 7, line 45). It would have been obvious to one of ordinary skill in the art at the time of the invention to modify Fatehi to include an alternating phase modulation of each of the regular and bar transmission signals, based on the teaching of Ono, to provide the benefit of compensating for dispersion.

Regarding claim 10, the combination of Fatehi and Ono discloses the apparatus of claim 2 further comprising: a transmitter for providing said source signal; a receiver; and an optical network having a first path and a second path, each of said paths being in communication with

Art Unit: 2613

said transmitter and said receiver; said apparatus adapted to transmit said first electromagnetic radiation signal from said transmitter to said receiver on said first path and to transmit said second electromagnetic radiation signal from said transmitter to said receiver on said second path (Fatehi: fig. 7 and col. 5, line 59 to col. 6, line 34).

Regarding claim 11, the combination of Fatehi and Ono discloses the apparatus of claim 2 in which said means for modulating the first electromagnetic radiation signal with said shift signal to shift the phase of said alternate data bit sequences comprises a phase modulator (Ono: fig. 8, element 3, as applicable in the combination).

Regarding claim 12, the combination of Fatehi and Ono discloses the apparatus of claim 2 comprising means adapted to simultaneously shift the phases of said alternate data bit sequences and of said alternate data bar bit sequences by modulation of said first and second electromagnetic radiation signals with said shift signal (Ono: fig. 8 and col. 6, line 65 to col. 7, line 45, as applicable in the combination).

Regarding claim 14, the combination of Fatehi and Ono discloses the apparatus of claim 12 in which said means adapted to simultaneously shift the phases of said alternate data bit sequences and of said alternate data bar bit sequences comprises a toggle flip flop circuit (Ono: fig. 8, element 7 and fig. 9, as applicable in the combination).

Regarding claim 22, the combination of Fatehi and Ono discloses the method of claim 16 in which said steps of modulating said first and second electromagnetic radiation signal with said shift signal comprise simultaneously shifting the phases of said alternate data bit sequences and said alternate data bar bit sequences (Ono: fig. 8 and col. 6, line 65 to col. 7, line 45, as applicable in the combination).

Regarding claim 23, the combination of Fatehi and Ono discloses the method of claim 16 comprising the further step of transmitting said first and second electromagnetic radiation

Art Unit: 2613

signals over a distance sufficient to generate chromatic dispersion resulting in some overlap between said data bit sequences and in some overlap between said data bar bit sequences, producing destructive interference (Fatehi: col. 2, lines 59-65).

Regarding claim 24, the combination of Fatehi and Ono discloses the method of claim 16 in which said step of modulating said first and second electromagnetic radiation signals with said shift signal comprises shifting said phases by about 180.degree (Ono: col. 6, line 65 to col. 7, line 30).

9. Claims 3, 13, 17 and 25 are rejected under 35 U.S.C. 103(a) as being unpatentable over Fatehi (US Patent No. 4878726) in view of Mizuhara (US Patent No. 6535316).

Regarding claims 3 and 17, Fatehi discloses the apparatus and method of claims 1 and 15, in which said modulator is an external modulator, but does not disclose that the modulator is adapted to modulate the relative phases of said first and second beams of continuous wave electromagnetic radiation with said source signal and to then subject said first and second beams of electromagnetic radiation to mutual interference. Mizuhara discloses a Mach-Zehnder interference-based modulator configured to generate first and second modulated optical signals that are inverted versions of each other (fig. 3 and col. 4, lines 6-24). It would have been obvious to one of ordinary skill in the art at the time of the invention to use the Mach-Zehnder interference-based modulator as an engineering design choice in implementing a modulator with complementary outputs as already disclosed by Fatehi. The type of modulator claimed merely amounts to the selection of expedients known as design choices to one of ordinary skill in the art.

Art Unit: 2613

Regarding claim 13, the combination of Fatehi and Mizuhara discloses the apparatus of claim 3 in which said external modulator comprises a dual output intensity modulator (Mizuhara: fig. 3 and col. 4, lines 6-24).

Regarding claim 25, the combination of Fatehi and Mizuhara discloses the method of claim 17 in which said step of modulating comprises controlling such mutual interference to selectively and simultaneously create said asserted data bits and said unasserted data bar bits (fig. 3 and col. 4, lines 6-24).

Double Patenting

10. The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. A nonstatutory obviousness-type double patenting rejection is appropriate where the conflicting claims are not identical, but at least one examined application claim is not patentably distinct from the reference claim(s) because the examined application claim is either anticipated by, or would have been obvious over, the reference claim(s). See, e.g., *In re Berg*, 140 F.3d 1428, 46 USPQ2d 1226 (Fed. Cir. 1998); *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) or 1.321(d) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent either is shown to be commonly owned with this application, or claims an invention made as a result of activities undertaken within the scope of a joint research agreement.

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

11. Claims 1, 3, 5, 8, 15, 17, 21 and 25 are provisionally rejected on the ground of nonstatutory double patenting over claims 1, 2, 8, 9 and 14 of copending Application No.

10/245029. This is a provisional double patenting rejection since the conflicting claims have not yet been patented.

Art Unit: 2613

The subject matter claimed in the instant application is fully disclosed in the referenced copending application and would be covered by any patent granted on that copending application since the referenced copending application and the instant application are claiming common subject matter, as follows:

Furthermore, there is no apparent reason why applicant would be prevented from presenting claims corresponding to those of the instant application in the other copending application. See *In re Schnieller*, 397 F.2d 350, 158 USPQ 210 (CCPA 1968). See also MPEP § 804.

12. Claims 1, 3, 5, 8, 15, 17, 21 and 25 are provisionally rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 1, 2, 3, 8, 9, 10 and 14 of copending Application No. 10/245029 in view of Karlquist (US Patent Application Publication No. 2004/0202481).

This is a provisional obviousness-type double patenting rejection.

Regarding claim 1, Application No. 10/245029 claims an apparatus for creating a communication signal, comprising a modulator adapted to: modulate a first and a second beam of continuous wave electromagnetic radiation with a source signal, assemble modulated portions of said first and second beams into a first electromagnetic radiation signal of interposed regular and alternate data bit sequences comprising asserted data bits, each of said data bit sequences being interposed by unasserted data bits, and assemble modulated portions of said first and second beams into a second electromagnetic radiation signal of interposed regular and alternate data bar bit sequences comprising asserted data bar bits representing said unasserted data bits, each of said data bar bit sequences being interposed by unasserted data bar bits representing said asserted data bits (Application No. 10/245029 claims 1 and 3). Application

Art Unit: 2613

No. 10/245029 claims 1 and 3 do not claim that the data bit sequences are NRZ coded in which mutually adjacent asserted data bits and data bar bits are conjoined. However, Application No. 10/245029 discloses SONET signals (paragraph 0041) and Karlquist discloses using NRZ coding for SONET signals (paragraph 0003). It would have been obvious to one of ordinary skill in the art at the time of the invention that signals of Application No. 10/245029 claims 1 and 3 would be NRZ coded as an engineering design choice in implementing the signals claimed. The type of signal coding claimed in the present application merely amounts to the selection of expedients known as design choices to one of ordinary skill in the art, as shown by Karlquist.

Regarding claim 3, Application No. 10/245029 claims the apparatus of claim 1, in which said modulator is an external modulator that is adapted to modulate the relative phases of said first and second beams of continuous wave electromagnetic radiation with said source signal and to then subject said first and second beams of electromagnetic radiation to mutual interference (Application No. 10/245029 claim 2, where a dual output Mach-Zehnder optical modulator for the modulator claimed in claim 1 inherently modulates the relative phases of the first and second beams with said source signal and then subjects said first and second beams to mutual interference).

Regarding claim 5, Application No. 10/245029 claims the apparatus of claim 1 in which said modulator is adapted to modulate first and second beams of continuous wave light (Application No. 10/245029 claim 3).

Regarding claim 8, Application No. 10/245029 claims the apparatus of claim 1 further comprising: a transmitter for providing said source signal; a receiver; and an optical network having a first path and a second path, each of said paths being in communication with said transmitter and said receiver; said apparatus adapted to transmit said first electromagnetic radiation signal from said transmitter to said receiver on said first path and to transmit said

Art Unit: 2613

second electromagnetic radiation signal from said transmitter to said receiver on said second path (Application No. 10/245029 claim 1).

Regarding claim 15, Application No. 10/245029 claims a method of creating a communication signal, comprising the steps of modulating a first and a second beam of continuous wave electromagnetic radiation with a source signal, generating a first electromagnetic radiation signal of interposed regular and alternate data bit sequences comprising asserted data bits, each of said data bit sequences being interposed by unasserted data bits, and generating a second electromagnetic radiation signal of interposed regular and alternate data bar bit sequences comprising asserted data bar bits representing said unasserted data bits, each of said data bar bit sequences being interposed by unasserted data bar bits representing said asserted data bits (Application No. 10/245029 claims 8 and 10). Application No. 10/245029 claims 8 and 10 do not claim that the data bit sequences are NRZ coded in which mutually adjacent asserted data bits and data bar bits are conjoined. However, Application No. 10/245029 discloses SONET signals (paragraph 0041) and Karlquist discloses using NRZ coding for SONET signals (paragraph 0003). It would have been obvious to one of ordinary skill in the art at the time of the invention that signals of Application No. 10/245029 claims 8 and 10 would be NRZ coded as an engineering design choice in implementing the signals claimed. The type of signal coding claimed in the present application merely amounts to the selection of expedients known as design choices to one of ordinary skill in the art, as shown by Karlquist.

Regarding claim 17, Application No. 10/245029 claims the method of claim 15 in which said step of modulating comprises modulating the relative phases of said first and second beams of continuous wave electromagnetic radiation with said source signal to produce first and second output signals, and then launching said first and second output signals into a

Art Unit: 2613

propagation medium such that said first and second output signals mutually interfere, producing said first and second electromagnetic radiation signals (Application No. 10/245029 claim 2, where using a dual output Mach-Zehnder optical modulator for the modulation claimed in claim 8 inherently requires modulating the relative phases of the first and second beams with said source signal and then subjects said first and second beams to mutual interference).

Regarding claim 21, Application No. 10/245029 claims the method of claim 15 in which each of said first electromagnetic radiation signal and said second electromagnetic radiation signal is an optical signal (Application No. 10/245029 claim 8).

Regarding claim 25, Application No. 10/245029 claims the method of claim 17 in which said step of modulating comprises controlling such mutual interference to selectively and simultaneously create said asserted data bits and said unasserted data bar bits (Application No. 10/245029 claims 8, 10 and 14).

Conclusion


13. Any inquiry concerning this communication from the examiner should be directed to N. Curs whose telephone number is (571) 272-3028. The examiner can normally be reached on M-F (from 9 AM to 5 PM).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jason Chan, can be reached at (571) 272-3022. The fax phone number for the organization where this application or proceeding is assigned is (571) 273-8300. Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (800) 786-9199.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications

Art Unit: 2613

may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pairedirect.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



JASON CHAN
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 2600